INNOVATION ABSTRACTS

Working Hard is Not the Same Thing as Working Smart

Faculty often bemoan their fate when they encounter students stridently arguing for a better grade on the basis of the amount of hard work they put into studying for a test. The poor faculty member is faced with the odious task of explaining that working hard is not the same as working effectively; that is, being a strategic learner is more than simple persistence. Students must know that it is not enough to work hard; they must also work smart.

Working Smart

Working smart means using study and class times advantageously. It means knowing about different strategies and skills that can help us to be more effective at making what we want to learn both understandable *and* memorable. We used to think of memory as simply a set of two related mental storage places—a short-term storage place and a long-term storage place. Now many educational psychologists conceive of memory more as a continuum, ranging from extremely short-lasting memories to extremely long-lasting memories. For example, if you call for information from a phone booth and you do not have a pen or pencil, you might try to just repeat the numbers quickly and dial the number as soon as possible. However, if someone comes along and asks you for some change, it is likely that you will forget the number and have to call information all over again. This is a very, very short-lasting memory task. Now let's move a bit along the continuum. Let's say you want to pick up a few things at the grocery on your way home from school. It would be useful to remember the list until you go home tonight, but you certainly would not be interested in remembering this list forever. Let's keep going . . . as faculty, it is adaptive for us to remember our classroom assignments for a quarter or semester. However, unless we teach in the same classroom or lab all of the time, we do not need this information forever. In fact, remembering this information from previous semesters could interfere with our getting to the right classroom on time this semester! At the other end of the memory continuum, in long-lasting memory, we find things like important information and understandings in our field. At the extreme (or very, very long-lasting) end, we store things like our name, where we were born, whether we have children, and so on.

Part of a student's task is to determine where on the memory continuum they need to store what they are attending to or trying to learn. This relates very closely to the student's goal for the learning task at hand. Many students think that meaningful learning involves storing things in the lower end of the short-lasting portion of the memory continuum. They do not realize that information stored here is just held onto temporarily. This is like mental rental space, and it is very subject to forgetfulness. We can hold onto things stored here for only a brief time before they are simply forgotten or new information is moved in and pushes out the old. Have you ever heard a student say that they knew the information for the test but then forgot it right afterwards? It is most likely that they did not really learn the material, they just held onto it in the lower, or rental space, portion of memory, and then forgot it as they tried to learn new things and moved new tenants, or information, into the rental space. Things stored in other parts of the memory continuum, particularly in the long-lasting portion, can be remembered for longer periods and can be used in future recall, problem-solving, learning, or decision-making tasks.

Meaningful Learning

Meaningful learning involves understanding and moving what we want to learn along the memory continuum, out of rental space. How far we want to move it will depend on our learning goal and the perceived present or future utility of the material we are trying to learn. Once we determine how important, or useful, the material is or will be to us, we must decide how we are going to try to make it meaningful and memorable. There are a number of different strategies we can use to help ourselves learn, and all of them have a number of characteristics in common. *First*, they are always goal-directed activities. Again, if the learner is not clear about his or her goal for studying or learning, then it will be difficult to pick an appropriate strategy for reaching the goal. *Second*, studying and learning strategies are intentionally invoked, which implies at least some level of conscious thought as well as active selection. To be a strategic learner requires being an active learner who thinks about how to approach different learning tasks. *Third*, studying and learning

strategies require effort and time, and often involve using multiple steps. *Finally,* they are not universally applicable. This is often very difficult for students to learn. A student's goals, his/her familiarity with the material, the context, the content, and the task conditions all interact to determine appropriate strategies.

Strategies For Generating Meaningful Learning

In general, strategies for generating meaningful learning help students to think about the material in ways that help their understanding and their storage of the material in memory. Included here are a number of common strategies students can use to help themselves learn effectively and efficiently.

1. *Creating analogies—looking for similarities or resemblances between two or more things.* In general, learners use something they already know, something that is similar to what they are trying to learn, to help make what they are trying to learn more understandable. This is a very powerful way we can use reasoning to try to establish meaning for something we want to learn and remember. For example, being a strategic learner is similar to being a manager of one's own learning. By using this analogy, it is easier for students to understand (and for us to teach) the varying roles and responsibilities of a strategic learner.

2. *Applying new knowledge—using new knowledge with different task materials in different contexts.* This helps students to clarify and consolidate their new knowledge as well as to integrate this new knowledge with existing knowledge already in memory. Examples of this method include any type of practice such as completing homework assignments; working extra problems; thinking up sample questions and answering them; or asking the instructor for additional practice work, or to give another example or two in class.

3. *Transforming the new information—putting the new information into your own words (paraphrasing), or summarizing it in your own words.* This strategy helps students to build meaning by highlighting and consolidating their new understanding. In fact, many educators do not consider that there is any understanding until students can at least paraphrase or summarize new information. The more the new knowledge is used and transformed, the more it will become part of their useable knowledge base and get moved along the memory continuum. Other methods in this category include creating diagrams, pictures, or charts of the material the student is trying to learn. These can also help many students to see the relation-

ships among the new bits of information as well as the relationship to old knowledge already in memory.

4. *Teaching the information to someone else—using some form of cooperative learning, peer tutoring, or group work to help consolidate and integrate new knowledge.* We have known for a long time that the person who often benefits the most in a tutoring situation is the person doing the tutoring. By teaching the material to someone else, we deepen our understanding of the material and think about effective ways to learn it. This not only helps us with present learning but it also makes us more aware of our learning strategies and helps us with future learning.

5. *Comparing and contrasting—looking for similarities and differences between new information you are trying to learn and existing knowledge.* This method not only helps to make the new information more meaningful, it also helps to distinguish it from existing, similar, or related knowledge. For example, by comparing and contrasting this method with using analogies, a student could gain a better understanding of the nature and appropriate use of both methods.

The Metacurriculum

The term metacurriculum refers to a learning-to-learn curriculum that is implemented along with the regular course content. The learning strategies portion of the metacurriculum would involve teaching, modeling, and reinforcing the use of learning strategies. We can teach these strategies by direct instruction during class or lab times. For example, in the early sections of a course, we could set aside 15 minutes per week to discuss strategies that seem most helpful for the type of content we teach. We can model the use of these strategies by overtly discussing them as we use them in our own teaching. When we use an analogy to help explain a complex concept, we could also point out the process we are using and why it is helpful for generating meaning. Finally, we can reinforce students' use of strategies by giving them direct feedback and discussing ways different students studied for the evaluations or tests in our class and the impact those strategies had on their success.

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